

## **APPENDIX A: RESEARCH SUMMARY**

## **A.1. INTRODUCTION**

This appendix provides the background information and data collected during the conduct of the study. It includes the research summary as well as the meeting minutes of the advisory committee. This appendix will help the reader understand the evolution of the recommended policies. The information contained in this appendix is as follows:

Section A.2: Market reviews

Section A.3: Other agency practices

Section A.4: Streetlight Policy Advisory Committee.

## A.2. MARKET REVIEWS

### A.2.1 VENDOR INTERVIEWS

The Study Team interviewed a number of vendors to explore the different types of current and upcoming technologies offered by them, and to learn about their opinions on the existing systems, advantages and disadvantages of different technologies, etc. HADCO, Traffic System and Technology (representing Union Metal and others), HOLOPHANE and Commercial Lighting Sales Inc. (representing Spring City, Valmont, and General Electrics) are among the vendors that supply different streetlighting components to DC. The summaries are as follows:

- **HADCO** supplies plastic globes, such as acrylic, fixtures, and poles up to 20 feet, with base and casing. They manufacture a high performance post top refractive globe that produces greater illumination, higher light levels and better uniformity, while reducing glare and energy costs. This refractive globe costs less to purchase and maintain than the popular Cobrahead.

HADCO also supplies aluminum and plastic bases. The plastic base is made of polyethylene that will not break, does not need to be painted, is durable even in the harshest environments, withstands high impacts, is ultra-violet (UV) resistant, and is safe against shock hazard and corrosion resistant.

HADCO recommended that a Type V globe non-cutoff is a good alternative to existing plain globes.

- **Traffic System and Technology** represents Union Metal and others. Union Metal supplies octafute Pendant Post that has a height of 28, 38 and 80 feet. It offers a prefabricated foundation that is hydraulically driven into the ground, LED light, Acorn globes and induction lights. Induction lamps have a long life (100,000 hours); however, the ballast doesn't last long, and therefore, the failure rate is very high.
- **HOLOPHANE** supplies glass and plastic globes, casing and Teardrop fixtures. They also manufacture refractive globes with better control of light. Their design leaves the ballasts under the casing, thus the globes are affected less as it produces less heat. They claim to provide higher ambient temperature specification and a vibration test for the globes. They recommended that a glass globe is a good alternative for the Monumental Core.
- **Commercial Lighting Sales** represents manufacturers like Spring City, Valmont, and General Electrics. Spring City offers cast iron poles, luminaires, arms and Teardrop fixtures. Its Type III and V of Columbian Series are available in glass and plastic globes. They have designed a special No. 16 pole with narrow base (17 inches as opposed to 24 inches) to help comply with ADA requirements for narrow sidewalks. They also supply refractive globes and Induction lamp.

Valmont supplies their Pendant Post to Commercial Lighting Sales and GE supplies their luminaire and conversion kit.

A more detailed interview minutes are provided below.

## HADCO

DCI met with Donald Fentress (Vice President) and Jim Lilley (Sales Representative) from HADCO. HADCO supplies globes, fixtures, and poles. The Fine Arts Commission picked Washington Globes as Standard 25 years ago. Cobraheads and Washington Globes are dominant in D.C. The Washington Globe is one of the most pleasing lighting fixtures architecturally. It was originally made in glass, but glass globes were discontinued, as they are not safe. The glass was 1 inch thick and when it falls, it breaks and could tear car tires, and the sharp edges of the glass could hurt someone. Therefore D.C. went from glass to plastic. All the glass Globes were thrown in a dumpster 15 years ago. Holophane, Spring City and HADCO manufacture Washington Globes. The present Washington Globe provides 15% light on ground with a 150-Watt lamp. HADCO took the Washington Globe and architecturally copied and put in the prisms to use the light effectively. The results were 29.1% of light was on ground with a 150-Watt lamp. Therefore, the refractive globes are best for dark skies. The demonstration of HADCO refractive globes is in front of the FBI building (Penn Ave & 9<sup>th</sup> St). There are different types of prismatic globes, i.e., the way the prisms are molded in the globe, for different types of lighting patterns. It was mentioned that the glare in the prismatic globes generally corresponds to the wattage of the lamp rather than the globe itself.

Types I, II, III, IV, V are the optical pattern light puts out with reflectors and prisms. Types III and V were discussed in detail. Type III produces better light, but also a little glare. Thus, the strong illumination can distract the driver. This is used in Baltimore's Inner Harbor and New Jersey's Atlantic City. But by using reflectors, 51.3% light is put on the street. If you put reflectors over the bulb it will lose 10% of light. Generally, taller poles spread the light around but the light coming down on the street decreases. Type V Globes have been used in DC. Reflectors can be in louver form. It was claimed that the use of a louver is not that efficient and would produce a max/min ratio of 13, while a refractive globe could produce 6.5.

The globes out on the streets were designed/tested for 250 Watt. If a higher wattage is used, it could melt the globe. There are many in D.C. where globes are melting as they are using 400 Watt when the globes are designed for 250 Watt. HADCO uses Acrylic materials. Plastic Globes made of Polycarbonate are strong and will never break. But after 5 years they will yellow because of UV rays and the light from the bulb. In addition they will become brittle with age, and as a result, when a rock is thrown at it, it will break. Generally, heat accelerates the deterioration process. A Poly-ethylene pole will never break, never needs to be painted, has a long life finish, maintains durability even in the harshest environments, withstands high impacts, is UV resistant, provides safety against shock hazard and is corrosion resistant. There is one plastic base installed in D.C.

HADCO uses the lights manufactured by Philips. It was recommended that a Type V globe non-cutoff be used as a good trade off. It was mentioned that DDOT doesn't use reflectors all the time, but uses them only when required. HOLOPHANE generally uses Type III. Twin-20 with a mounting light unit at a lower height is being replaced with Teardrops on I-395. A

copy of the article, *The Dallas, Oregon & QL Induction Lighting* on Philips' Website, was given to DCI. (From the article, – QL is much whiter than HPS, offers undistorted high color rendering, and provides softer lighting effects with less glare compared to MH.) Frederick (MD), Oregon and Stanford (CT) have used QL Induction Light.

HADCO's Teardrop TR 4 Series is light in weight; it is made of acrylic and not glass. It does not use a button type but instead uses a twist lock. Black is the best color to be used for fading. A woman in NY was electrocuted after stepping on an electrified metal plate while walking her dog. It was mentioned that care should be taken regarding the wires dangling from light poles and service boxes exposed to the elements. HADCO demonstrated a plastic base, free from electrification problems.

20 feet poles with architectural fixtures are too difficult as the pole is too high to install. HADCO makes poles up to 20 feet, with bases and casing. A height of 12-16 feet is optimal for maximum output of light; thus, Twin-20 are a bit of a stretch. Sidewalks should be considered in the lighting design to enable motorists to see pedestrian movements. HADCO designed globes with 150-Watt light (no reflector), which can be equivalent to 250-Watt light with standard globes. HADCO provided DCI with a CD showing the installation of a plastic globe. A copy of the history of NY streetlights and literature about white and yellow light of an ophthalmologist were also given. A tour around Baltimore was offered to DCI to give a better visual understanding.

Over 15 years dirt may settle in the globes and the light output will be generally reduced. This is a maintenance issue for both glass and plastic globes. Baltimore City has been using refractive globes for the past 8 years and has standardized the practice. HADCO offered DCI a refractive globe casing with different types of lamp attachments (HPS, color corrected HPS and Induction lamp). It was found that the color corrected HPS was not as white as the Induction Lamp, even though it was whiter than HPS itself.

### **Traffic System And Technology**

DCI met with Sam Dominick. Traffic System and Technology has been providing Traffic and Lighting products since 1984. They operate as both a manufacturer's representative and distributor of various products. They represent many manufacturers, a few of them are, Union Metal Corporation, King Luminaire, Electronic Integrated System (EIS), Precision Solar Control, etc. They offer a prefabricated foundation (SAFE) that is quick in installation and can be hydraulically pressed into the ground. It costs as much as concrete foundation. LumiTrack offers sign lighting maintenance systems that are installed on the SE/SW freeway and cannot be installed on cantilever beams.

Union Metal was established in the 1900s and offers the Nostalgia series. King Luminaire manufactures Spun Concrete, Ferronite Cast Iron, Cast Iron Base/Steel Shaft and Aluminum poles. They also offer luminaries, arms and bollards. The concrete poles need no maintenance and are installed at Washington Center and the US Soldier home. Traffic System and Technology offers octaflute poles (28, 38 and 80 feet) and LED lights.

For sign lighting, SHA uses Mercury Vapor, Virginia uses HPS, and DC uses HPS, MH and Mercury Vapor. Induction lamp is an emerging technology that is widely being used in Europe. It has a long life (100,000 hrs), however, the ballast doesn't last long and the failure rate is very high.

The Teardrop luminaires are made by Union Metal and King Luminaire. M.C. Dean (a contractor used by DDOT) uses King Luminaire products. King Luminaire still makes glass globes. The standard globes produce 78% efficiency. Polycarbonate yellows in 3 years while acrylic is good for 12 years. A CD with King Luminaire products was given to DCI.

### **Holophane**

DCI met with Benjamin M. Prichard (Newark), John A. Vlah (Annapolis) and Ken Roth (Pennsylvania). The prismatic Washington Globe casing was shown in the meeting and it was manufactured without sacrificing its historical identity. Some of these installations were in Georgetown and on 9<sup>th</sup> Street, but were removed later. They stated that this installation saves energy, will take any kind of abuse, and is easy to maintain. The casing is the same for Nos.16, 18 and Twin-20.

The prismatic structure is molded in the Globe. The prismatic structure is the same for glass and acrylic. UL testing is performed for 40° ambient temperature. This type of globe saves energy, has greater illumination, has a cost reduction, maintenance reduction and also provides visual comfort. A clear and clean visual range is obtained from such globes. The prismatic structure has no sharp edges because sharp edges cause glare and therefore the edges are rounded instead. A glass globe with a perforated shield was shown. Generally uplight shield reduces uplight roughly by 2%. Uplight Shield has advantages and disadvantages. The globes are made of acrylic plastic (V 8 25 HID) which is better under any weather conditions. It is protected from UV rays not only from the sun but also from the source. Heat sources are generally from core and coil.

Holophane suggested using acrylic for high crime rate areas and glass otherwise, as nothing is bullet proof. The glass globe was suggested for the commercial areas and acrylic for residential areas. The color corrected HPS was not as efficient as the HPS, as the optical coating gets burnt out.

It was mentioned that MH is becoming more popular in other countries. Holophane prefers glass globes under normal conditions as they last forever and plastic degrades with time. Generally, degradation depends on location and exposure to sun.

Holophane suggested glass globes for Downtown/Monumental Core as there would be no discoloration and the light would be whiter. The cost of glass (expensive) and acrylic (less expensive) are pretty close. Holophane has been testing acrylic for 6 years. The index is between 1 and 2 on a scale of 1 to 10, with 1 being the best. It was mentioned that the heat is generated from the lamp and the ballast.

IES defines an index called the Yellowing Index (ranges from 1-10, 1 being good, 10 being bad). Polycarbonate has an Index of 5 (IES Handbook), which is a tougher material when

compared to acrylic. But acrylic has better optical properties and holds up better to heat. When the pole bends along with the wind, the lens comes off, but acrylics won't do that with fixtures. Generally, the fixture life reduces half for each 10° increase in temperature above the ambient temperature.

Photocells can be placed in the casting by cutting a small opening in the neck of the casting. But DDOT requires the photocell at 45° minimum. If the photocell is perpendicular it will shoot out straight. Holophane suggested that a prism could be put on photocell so that it shoots down on the ground.

Vibration testing is important, as the globe may tend to fall under high winds. Holophane's globe passes the vibration test. The casting that was brought for demonstration was tested for 150 Watt HPS that fits No. 16 and Pendant pole. (i.e. 3 inch x 3 inch tenants). It did not have a photocell but would generally use a button type photocell. The Acrylic Globes are tested for up to 400 Watt HPS for 45°C ambient temperature. The globe is not a concern as it is tested for 400 Watt but the casing may need to be bigger for 400 Watt HPS. 9<sup>th</sup> Street has a Holophane Washington Globe demonstration.

The globe size is not flexible (diameter) but the neck of the globe can be changed to fit in the existing casting. Plastic is easy to form or mold, but glass is difficult. An existing model/pole needs to be tested for whether the casting can be fixed to the tenant of the existing poles in D.C. or globe to the existing casting in D.C. Holophane suggested that a collar can be used to fit the globe on the existing casting.

The Holophane's Glass and Acrylic Globes are Type III optical distribution. Type V has a circular distribution (application - Islands and Parks), Type IV has a wider oval distribution and Type III has a narrower oval distribution. Type V can be used for residential areas with household shields at 90°, 40° etc. The efficiency is about the same for Types III, IV and V

The globes installed on the street have 50% of the light going up but with Holophane's globe only 25% of the light is going up.

Holophane's Teardrop poles are installed on 16<sup>th</sup> and Kennedy Streets. They are very efficient and save energy. This type of pole combines efficiency and aesthetics. The manufacturers are performing some tests to make them better, i.e., more decorative, functions like Pendant Posts, etc. Holophane also came up with the prismatic design of the Teardrop globe that was used in the 1996 Olympics in Salt Lake City and in Silver Spring. If you replace Cobraheads with Teardrop they perform very well but it depends on the height and road width. For narrow streets (less than 30ft), Cobraheads are better and for wider streets (85-90 feet), Teardrops are better. The Teardrop fixtures come in cutoff. If you have a lower uniformity ratio, Teardrops make it brighter. The manufacturers showed 2 sizes of Teardrops, for roadways (bigger, Type V) and pedestrians (smaller, Types III, IV). When light is needed on the road as well as for pedestrian traffic, cutoff can be used. Cutoff has advantages (good light control on the property line) and also disadvantages (reduces vertical illumination and efficiency). It was stated that DC uprights were designed for Incandescent lights, and hence use conversion kits now. DDOT requested cost information regarding retrofits and new installations for globes, kits and casings.

### **Commercial Lighting Sales, Inc.**

DCI met with Jim Wheeler from Commercial Lighting Sales. Commercial Lighting Sales represents Spring City (manufactures cast iron posts, luminaire, arms, etc), Valmont (manufactures Cobrahead) and GE (manufactures Cobrahead Fixtures, Ballast conversion kit, etc). For narrow sidewalks, Spring City came up with 17 inches diameter for a No. 16 pole with a narrow base and 12 inches bolt circles, accepted by DDOT. The shafts that are being used fit in narrow bases (interchangeable). It can use the same casing and the globe can withstand 400 Watt. The No. 14 narrow base poles are being used mostly on Ohio Drive. It was mentioned that a higher pole means a higher wattage, and a higher wattage means a higher conduit. But wider bolt circles will have better stability and a clearer opening for more conduits.

In Chinatown, the Teardrop has been cast and fixtures were manufactured by Spring City. They mentioned that dark skies are very conflicting because sometimes it is required to illuminate the building for safety reasons. The District sometimes uses Finial. A Pineapple Finial is mounted on a No. 16 pole when used as a traffic post. The ballast kit fits inside the existing casing. The luminaire used is GE (M-400A2). It has two doors underneath – 1) for the light, and 2) for the ballast (this second door is called the power door). This separate power door allows for quick maintenance. There are 4 bolts on the Pendant pole with two clamps. If maintenance person or electric cranks up one clamp there is another. The main issue is that there is not enough spacing for wires, as in other products. The Cobrahead has a twist lock photocell and all the other posts have a button type.

The Induction lamp has been used in Europe for quite some time. The only problem is that it has a lower wattage (130-150 Watt) but has a long life. Plain plastic globes are generally used in the District. The formed plastic globe is made of stipple polycarbonate. The stipple Acrylic Globe does not yellow like plastic and therefore is a better way to go, as plastic becomes brittle with age. Acrylic is also better for higher wattages. The refractive globes demonstration is in front of the FBI building. When reflectors are used (for Type III – an asymmetric lighting pattern), maintenance people need to be aware of the distribution of light so that the light should be focused on the streets (and not on the building). Generally, beam control fixtures (louvers and refractive globes) have maintenance issues, as they need more time to service (need to be taken to the shop for service, no onsite service). Commercial Lighting Sales are supplying louvered acorn globes for Pennsylvania Avenue's Streetlight project.

The Federal Colors are 16099 – Gray and 27038 - Black. DC's gray is not same as 16099. DC's gray is more dark gray and 16099 has bluish tint. The Downtown BID requires black color (27038). They developed their own spacing criteria; so standard spacing is already available for the Downtown BID. National Park Services mostly use the black color. The black color is used for decorative purposes and the aluminum finish is used for Cobraheads.

The globes that are used currently have a dimple like pattern and are not refractive. Fluting Pattern, i.e., 16 flat flute, is available for the Twin-20 pole and No. 16. (Standard for DC). Sharp flute (8) is available for Pendant poles. The steel shaft is provided for the Twin-20 and the Pendant pole; and the cast iron shaft is generally used for other types, such as the Nos.16,



14, and 18. On Georgia Avenue, the No.18 pole is being used and people are discontent with No.18 poles and want to get back to the No.16 pole. In Monumental Core, No.18 poles are used for traffic poles (can also use No. 716). Generally both the Nos. 18 and 16 can be used as traffic poles. The No. 716 pole is used under Chinatown fixtures. It is a 14 feet tall pole and it is a less expensive version of the No.16 pole. Sometimes the No.716 pole is used for signs (generally mounted on the side). The T-base is not painted, but generally galvanized. The only time it was painted was in Chinatown, where it was painted green, and the pole was painted red. The No. 716 pole, when used with traffic control devices, uses 16099 color and a galvanized T-Base.

Teardrops, a Columbian Series in Type III and V, are available. Glass and plastic globes are available for it. As glass is heavy, it is easier to service the plastic globes. It can be mounted on regular Pendant poles.

## **A.3. OTHER AGENCY PRACTICES**

### **A.3.1 AGENCY INTERVIEWS**

The Study Team conducted interviews with other jurisdictions in order to determine the prevailing lighting practices. The questionnaire that was provided to other agencies is presented at the end of this subsection (Section A.3.3). Listed below are a summary of the jurisdictions interviewed and their current lighting practices/standards:

#### City of Indianapolis

Ms. Sherry Powell, City of Indianapolis Department of Public Works, was interviewed. Ms. Powell indicated that the City is currently utilizing HPS and MH lighting fixtures. However, the current goal of the City is to convert all fixtures to HPS due to the longer life spans and lower initial costs. The City currently uses wood, aluminum and fiberglass poles. Within the historic districts of the City, refractive globes are used with HPS lighting fixtures. Within the residential areas, Cobrahead lighting poles with HPS lighting fixtures are primarily used.

#### Maryland State Highway Administration (MDSHA)

Mr. Charles Rupp from MDSHA's Office of Traffic & Safety was interviewed. Mr. Rupp indicated that MDSHA's policy is to use HPS lighting fixtures in all areas. The primary lighting pole type used within the State is the Cobrahead lighting pole with HPS lighting fixtures with full-cutoff distribution and a Type III lighting pattern to minimize rear spillover light. On bridges within historic areas, refractive lighting globes are occasionally used with HPS fixtures. In addition, along interstate roadways, high mast lighting poles with mounting heights between 100 and 120 feet are also used with 1,000 Watt HPS luminaires with a Type IV lighting pattern. However, Mr. Rupp indicated that high mast poles are currently being used on a lesser scale due to spill over complaints from adjacent residential communities.

#### Virginia Department of Transportation (VDOT)

Ms. Pamela Brookes, VDOT Headquarters, Richmond, Virginia, was interviewed. Ms. Brookes indicated that VDOT's primary lighting pole and fixture is an offset hinged lighting fixture (Holophane's Vector Pole) with a 250 Watt HPS lighting fixture. However, VDOT is currently utilizing Holophane's Mongoose lighting pole fixture on a greater scale (similar to the Cobrahead lighting pole) that allows for a full cutoff to semi-cutoff lighting distribution to minimize rear spillover lighting.

#### City of Boston

Mr. Glen Cooper, City of Boston Department of Public Works, was interviewed. Mr. Cooper indicated that the City uses aluminum, concrete and cast iron lighting poles. The City uses the following poles and lighting fixtures: a rectangular 250 or 400 Watt Mercury Vapor acrylic prismatic fixture on an aluminum post with a 15 inch bracket arm; a rectangular 150, 250 or 400 Watt Mercury Vapor acrylic prismatic fixture on a concrete pole with a 22.5 inch bracket arm; a Boston City Neighborhood Globe (polycarbonate) with a Type III lighting

pattern and with a semi-cutoff distribution; and a Boston Boulevard Pendant Twin (similar to a Teardrop pole) with a 26 foot mounting height and a 250 Watt Mercury Vapor lighting fixture.

### City of New York

Mr. Moktar Gabriel, P.E., Deputy Chief Engineer, City of New York Department of Transportation, was interviewed. The lighting illumination ranges used as a guideline within the City of New York are slightly higher than the recommended ranges within AASHTO. The recommended uniformity ratios are similar to the AASHTO guidelines. The primary poles and luminaires used within the City are Cobrahead lighting poles with 100, 150 or 250 Watt HPS luminaires. In designated “Special Areas”, Globe type fixtures are used with luminaires ranging from 100 to 400 Watt HPS. In “Decorative Areas”, Teardrop style lighting poles with 150 or 250 Watt HPS or MH luminaires are used. For overhead signs, 175 Watt MH lighting fixtures are used.

### **A.3.2 INTERNET RESEARCH**

In addition, limited research was conducted on the Internet to determine the lighting practices of other jurisdictions. The following summarizes the findings:

#### Oregon Department of Transportation (ODOT)

ODOT uses the Cobrahead lighting fixture as their primary lighting pole along most roadways with a 70 to 400 Watt HPS luminaire. ODOT’s lighting guidelines with regards to: minimum point values, average maintained illuminance, average-to-minimum ratios, maximum-to-minimum ratios follow the American Association of State Highway and Transportation Officials (AASHTO) Informational Guide for Roadway Lighting. For interstate roadways, high mast lighting poles are used with HPS fixtures ranging from 400 to 1,000 Watt. For lighted overhead signs, ODOT uses Mercury Vapor lighting fixtures.

#### New York State Energy Research and Development Authority (NYSERDA)

NYSERDA conducted a research study to determine the most cost-efficient lighting methods to be used within the State of New York. Based on a total annualized cost formula that included the initial costs, energy consumption, and maintenance costs over a 20-year period, NYSERDA determined that a 250 Watt HPS luminaire on a sharp cutoff (shoebox type) lighting pole provided the most cost efficient lighting solution. However, the report also indicated that the fair (yellowish) color properties of the HPS luminaire must also be considered in the design.

#### City of Kent, Washington State

The City of Kent lighting guidelines provide many lighting criteria that include uniformity ratios and minimum lighting values that are consistent with AASHTO lighting standards. The City of Kent has chosen the following two (2) lighting pole options: HADCO Series 21 and Series 22 Aluminum Streetlight Standards and Mast Arms, or Valmont Series 21 and Series 22 Aluminum Streetlight Standards and Mast Arms. Both of these lighting poles

require the usage of HPS lamps with a flat lens, medium cutoff distribution, and a Type III lighting pattern.

### Other Cities

Prismatic globes have become the standard practice for many jurisdictions now. Examples in the metropolitan area are Baltimore, Frederick, and Falls Church. The City of Rehoboth Beach has developed, as a part of the streetscape project, a unique streetlight design, with twin arm, teardrop lights in the median and concrete poles with prismatic, Washington-type globes on the sidewalks. They use pendant poles to support traffic signals over the intersections.

More information on these implementations will be provided in the Final Document.

### **A.3.3 LIGHTING QUESTIONNAIRE**

Date \_\_\_\_\_

City: \_\_\_\_\_

Point of Contact: \_\_\_\_\_

\_\_\_\_\_

1. What are your illumination standards for residential areas, commercial areas, and other areas (if applicable)? If you have specific criteria, please include the following information:
  - i) Average Maintained Illuminance Level (foot-candle) \_\_\_\_\_
  - ii) Average-to-Minimum Ratios \_\_\_\_\_
  - iii) Maximum-to-Minimum Ratios \_\_\_\_\_
  - iv) Minimum Point Level Illumination \_\_\_\_\_

1. What lighting type distributions are utilized (e.g. Type 3 cutoff distribution)?

\_\_\_\_\_

2. What types of luminaires are utilized in various areas (i.e. High Pressure Sodium, Metal Halide, Mercury Vapor, inductive lamp, etc.)?

\_\_\_\_\_

\_\_\_\_\_

What is your experience about them? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Any remarks on inductive lamps (if used) \_\_\_\_\_

- What types of pole (by material) are used in various areas (i.e. aluminum, steel, cast iron, concrete, fiberglass, wood, etc.)? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- What is your experience about them? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Any remarks on concrete poles (if used) \_\_\_\_\_
3. What types of pole (by type) are used in various areas (e.g., Upright, Cobrahead, etc.)?  
i) Historic district \_\_\_\_\_  
ii) Commercial area \_\_\_\_\_  
iii) Residential \_\_\_\_\_  
iii) Other \_\_\_\_\_
4. What type of fixtures do you use for tunnel lighting? \_\_\_\_\_  
Underpass lighting? \_\_\_\_\_  
What is your experience about them? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. What type of fixtures do you use for sign lighting? \_\_\_\_\_  
What is your experience about them? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Is there any particular type that you'd use to provide the true color of signs?  
\_\_\_\_\_
6. What lighting manufacturers are used for the poles and lighting fixtures?  
\_\_\_\_\_  
\_\_\_\_\_
7. Specific Issues/agency solutions:  
i) Dark skies. What do you do to achieve dark skies?  
Refractive globe or lens \_\_\_\_\_, shield \_\_\_\_\_, any other \_\_\_\_\_  
ii) ADA requirement (36" sidewalk). What do you do when you have an already-narrow sidewalk \_\_\_\_\_  
\_\_\_\_\_

## **A.4. STREETLIGHT POLICY ADVISORY COMMITTEE**

DDOT formed a panel of advisors to serve on a committee to steer this study. The committee was formed from members of relevant agencies and citizen groups. The committee held a series of meetings and directed the course of the study, made evaluations of various alternatives and provided specific recommendations on various aspects of the streetlight policy issues.

In order to help understand the rationales and how some of the requirements were generated in these meetings, the minutes are included in this section.

## **MINUTES OF THE MEETING HELD ON 3-10-04**

### Introductions and Goals

Kristina Alg –

- Consistent streetlight policy – varying size, type of lights, etc for different types of streets
- Concern about installation of streetlights

Jack McKay–

- Finding a “happy medium” of lights in Mt. Pleasant
- Need of guidelines

Larry Aurbach–

- Illuminating bridge structures

### Presentation

1. A number of technical clarification questions concerning watts, location etc.
2. Request for the study to compare the budgets of overhead lines and underground lines.
3. John Deatrick wants recommendations about current ongoing bridgework using standard lighting.
4. Comments were brought about AASHTO standards resulting in lighting being either over lit or under lit.
5. Slide 42 of the presentation – need to quantify measures.
6. Recommendation of a lighting control that rely less on PEPCO.
7. Take sidewalk width into consideration when choosing a pole (e.g. pole base No. 14 vs. 16)
8. We need to also consider night pollution and efficiency
9. Concerns about lighting and crime perception in the Historic Anacostia area.
10. Consider pole color/type.
11. Understanding of current conditions is needed to gain an idea of variations of illuminants.
12. How do we market guidelines/get info to the public?

### Action Items

1. Mike Dorsey and Jama Abdi will create a drive-through tour of lighting types. This tour will occur during a date and time, TBD in March. Advisory Committee members can participate in this tour or go out on their own.
2. Colleen Smith Hawkinson will email light routes (to include Barracks Row and street specifications such as width and type) for those who are interested in touring independent of the group.
3. Samira Cook will create a matrix using the suggested characteristics (see evaluation criteria and preliminary sample chart below)

4. Light readings will be taken to get an understanding of lighting strength
5. Lighting tours should be conducted in March before the next meeting
6. Tentative Next Meetings: April 14<sup>th</sup> at 10 am

May 12<sup>th</sup> at 10 am

May 25<sup>th</sup> at 10 am

All future meetings will be held in DDOT's Traffic Services Administration's 7<sup>th</sup> floor Conference Room. You will take the elevator to the 7<sup>th</sup> floor and go to your left through the double glass doors. Continue down this hallway until you see another set of elevators on your left. Turn right at this elevator and go through another set of glass doors. The receptionist will direct you to the room.

Evaluation Criteria as determined by Advisory Committee

- Efficiency
- Aesthetics
- Color of light
- Level of light pollution
- Type of roadway (highway, corridor, residential, commercial)
- Type of fixture
- Ability to standardize
- Spacing of poles



## **MINUTES OF THE MEETING AND THE FIELD TRIP HELD ON 3-24-04**

### Meeting

1. Discussion about the AASHTO standards minimum resulting in lighting being over-lit.
2. We need light on the pavement and the light above the luminaire is not generally desired. Very little light is directed on the ground while most of the light is wasted sideward and upward.
3. Recommended the poles to be placed uniformly for uniform distribution of light.
4. As cost is a major issue, what is the cost difference between the glass, plastic and refractive globes?
5. HPS (approximately 5-6 years) has a long life compared to Incandescent (approximately 6 months) and MH (approximately 3 years).
6. 14N – predominant in Georgetown. Mostly No.16 is used in other areas.
7. Cobraheads or Pendant poles are generally used for signals and walk signs.
8. A narrow base that is used to fit on a narrow sidewalk may look very disproportional.
9. An area with a high crime rate can change and also the technology may change with the passing of time.

### Field Trip

1. Mike Dorsey and Jama Abdi took the Advisory Committee members for a tour of lighting types.
2. MH is used in Monumental Core (National Park Service regulation).
3. The 150 Watt HPS refractive/prismatic globe is better lit than 250 Watt HPS regular globe.
4. Spring City, HADCO and HOLOPHANE refractive/prismatic globes are on Pennsylvania Avenue for a demonstration. The prismatic globe casts a bright band on the adjacent building but the pavement is better lit.
5. The 400 Watt MH and 400 Watt Mercury Vapor have the same brightness.
6. The light level on the sidewalk on M Street, SE across from Navy Yard under an upright (No. 18) pole with standard Washington Globe and Twin-20 was almost the same.
7. Should the matrix include light levels (for upright, Pendant, Twin-20 and other commonly used poles for commonly used wattage) on sidewalks and between the poles at the same distance from the pole or curb and at the centerline of the street? It should be recorded where the lamps are in their life cycle, i.e. newly installed, mid life or end life.

## **MINUTES OF THE MEETING HELD ON 4-14-04**

A Streetlight Advisory Committee Meeting was held in Conference room, 6<sup>th</sup> Floor, District Department of Transportation on 4-14-04. The minutes of the meeting are as follows.

### **Summary**

1. Ken Laden started off the meeting at 10:05 a.m. He briefly summarized the scope of the project. He mentioned that DCI is the consultant working on the project and will look into different jurisdiction's streetlight standards and come up with recommendations for DC.
2. Colleen Hawkinson stated that it was the second Streetlight Advisory Committee Meeting that was being held. She mentioned that a field trip was made on March 24<sup>th</sup> in DC and the participants were able to see different types of lights and luminaires, and take the light readings. She also pointed out that the recommendations are going to be a range of lighting standards (i.e., 2-3 types of poles, different illumination levels, etc.) rather than a single given standard. She said that a draft for this project would be presented to the Committee around the middle or end of May and will be distributed to the Committee. Public Meetings are also going to be held and the resulting feedback will be incorporated in the Final Draft, which will be completed in early July. It will include a presentation to Fine Arts Commission.
3. Larry Green presented the task status and the updated comparison tables. He mentioned that a range of illumination levels for various road classifications would be recommended. He showed figures for a typical average illumination field survey procedure, various lighting types, poles and other fixtures. A focus group is going to be formed to discuss the AASHTO Standards, lower and upper lighting illumination limits, and the new technologies. He also spoke about the typical colors that are used for poles, DC typically uses black (27038) and gray (16099), Golden Triangle BID requires black (27038) and the National Park Services mostly use black.
4. During the course of the presentation, several items were discussed or suggested:
  - The prismatic acrylic globe reduces the wattage requirement to provide the same level of illumination, because the light is directional, and therefore, a fewer number of shorter poles can be used. Also, it does not cause uplifts and subsequent light pollution.
  - The committee wanted to know the benefits of glass over plastic globes, a case study where glass globes are being used and the lifetime cost of the globes. The group was also interested to know the list of places where prismatic globes are used in Baltimore. It was suggested that the height of the building and the poles needed to be considered in the design of streetlights.
  - The policy should include a range of illumination standards, as the AASHTO standards may appear to be too bright for some neighborhoods. The range of levels will allow a community to have too bright light if they want and vice versa. There was a suggestion to look into the uniformity of the light distribution on the road, along with the illumination levels. It was mentioned that the prismatic globes will not help with the uniformity and it would still depend on the pole

height and the spacing between them.

- Commercial lights (from stores, shopping centers, etc.) contribute to the prevailing lighting levels on the roadways/sidewalks. There was a discussion whether it should be considered in the design of streetlights. It was concluded that there was no control over these lights (as to when it would come on or go off); so it was not feasible to use in the design. Moreover, commercial lights are in commercial areas, where bright light may not be a problem.
- In the case of narrow sidewalks, instead of using a pole with a smaller base, a shorter pole (proportional with narrow base) should be considered, as the pole may not look proportional with a narrow base.
- There was a recommendation to look into the role of the pole bases. For example, a square base, also known as a transformer base, has a maintenance issue, is prone to vandalism and often gets rusted out. Mike Dorsey explained that these bases were used to house transformers for mercury vapor lamps and thus, called a transformer base. Although Mercury Vapor lamps are being phased out, the access door in the transformer base continues to provide the ease of cable maintenance. Anchor based poles with hand holes can be alternatives; however, these are not used.
- The steel and cast iron poles when painted with the same color look different. Therefore, even if the same color is picked for a neighborhood, the color may vary depending on the material of pole. Poles used to be painted every 7 years; now, they are powder coated.
- In general, DC uses gray and NPS uses black colored poles. The poles on the bridges are usually colored different than these.
- Intersections should have different design criteria. The consultant needs to look into mid-block vs. intersection criteria.
- The recommendations of the study should be a multi-dimensional matrix, the contexts for which should include: a) roadway functional class, b) area type (e.g., residential, commercial, etc.), and c) special areas, such as historic districts, bridges, etc.
- In the alleys, generally a full-cutoff luminaire is used. New installations are there on the south side of U Street, near Reeve's Center.
- A suggestion was made for the use of short poles in the case of trees. The design should also consider handicap accessibilities.
- The final product should have an illustration with a small area map indicating the standards applied to various contexts within the map. A list of definitions needs to be included for a better understanding. The lit pictures of the prismatic globes can also be presented to have a visual understanding.
- One very important thing is to educate public regarding the brightness, safety, etc. Most people think that if an area is bright, then there is no crime; but in some cases, it was found that bright light has attracted some criminals.

5. There was a discussion on the evaluation matrix, as follows:
  - The evaluation matrix will be used to compare various alternatives; however, it will be used as a general guide and multiple candidate alternatives will be selected.
  - For the first table, it was suggested that the level of pollution should be considered not only for the upward direction, but for sideways direction also. Historic, Monumental Core and Special streets should also be considered for type of roadways. The height of the pole should also be considered along with the spacing of the poles, because height is one of the contributors for bright light.
  - For the second table, among the lamp alternatives, Mercury Vapor and Incandescent light were being phasing out (towards HPS) and therefore, did not need to be evaluated. MH has been used mostly in Monumental Core. New technologies like the LED Light and Induction Lights should be evaluated. Induction lights have been used a lot in Europe, and the lamp and ballast is one assembly. This lamp has a life of 25 years and is generally used in residential areas, but needs 100% cutoff. The quality of light, consistency and illumination levels should also be considered. The life cycle cost should be used as one of the evaluation criteria. Instead of a cost figure, subjective qualitative rating (e.g., high, medium and low) or numerical grades (e.g., 1-10) can be assigned for the life cycle cost.
  - The third table needs to tailor to suite the context of the area of usage. Type of area (residential/commercial) should be considered. The height of the building, sidewalk width, roadway width, and public space width should also be considered. It was concluded that different matrices would be generated for each different context.
6. There will be a follow-up meeting for evaluation using the matrix on May 28 (10 a.m. - Noon). DCI will work on setting up the matrix and send out to the Committee ahead of time.

## **MINUTES OF THE MEETING HELD ON 4-28-04**

A Streetlight Advisory Committee Meeting was held in the Conference room, 6<sup>th</sup> Floor, District Department of Transportation on 4-28-04. The minutes of the meeting are as follows.

### Summary

1. Colleen Hawkinson started off the meeting at 10:15 a.m. She mentioned that the main purpose of the meeting was to discuss the Evaluation Matrix framework.
2. Manzur Elahi presented the Evaluation Matrix framework. An evaluation framework was developed for the evaluation of several streetlighting elements, as listed below:
  - Lamp alternatives
  - Globe alternatives
  - Shielding/Cutoff alternatives
  - Pole alternatives

A set of matrices had been developed for evaluating various alternatives. Also, a set of contexts had been identified for evaluation of items under possible scenarios. The objective of this evaluation was to gain knowledge of the collective preference of the Streetlight Advisory Committee. This framework will be used to compare various alternatives; however, it will be used as a general guide and multiple candidate alternatives will be selected.

3. The following table presents the Advisory Committee input to identify evaluation criteria for the streetlight policy from the two previous meetings. The identified criteria were examined to see whether they are quantifiable and how they fit in the evaluation framework. A few of them were quantifiable, others were contexts rather than criteria for evaluation and several others were design issues.

### *Criteria Suggested by Advisory Committee*

<b>Criteria Suggested by Advisory Committee</b>	<b>Comment</b>	<b>Way to Quantify</b>
Efficiency	Need to be presented as identifiable items, such as: a) life duration, b) power consumption, c) light output/distribution, etc.	Subjective rating (1-10)
Aesthetics	Applies only to structural element	Subjective rating (1-10)
Color of light	Applicable only for lamp/luminaire	Subjective rating (1-10)
Level of light pollution (upward & sideways)	Applicable only for lamp/luminaire	Subjective rating (1-10)
Roadway classification (Interstate, Other Freeway & Expressway, Principal Arterial, Minor Arterial, Collector, Local and Alley)	Does not represent an objective function that can be rated or optimized. It is a <b>context</b> for evaluation. It is also design issue and the study will have criteria for them.	N/A

Criteria Suggested by Advisory Committee	Comment	Way to Quantify
Area Type (Commercial, Intermediate & Residential)	Does not represent an objective function that can be rated or optimized. It is a <b>context</b> for evaluation. It is also design issue and the study will have criteria for them.	N/A
Special Type (Gateways, Monumental Core, BIDS)	Does not represent an objective function that can be rated or optimized. It is a <b>context</b> for evaluation. It is also design issue and the study will have criteria for them.	N/A
Tunnels/Underpass	Does not represent an objective function that can be rated or optimized. It is a <b>context</b> for evaluation. It is also design issue and the study will have criteria for them.	N/A
Bridges	Does not represent an objective function that can be rated or optimized. It is a <b>context</b> for evaluation. It is also design issue and the study will have criteria for them.	N/A
Type of fixture	This is an <b>item for evaluation</b> , not a criterion.	N/A
Ability to standardize	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Spacing of poles	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Height of the pole	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Height of the building	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Base of the pole	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Road Width	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Sidewalk Width	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A
Crime Rate	Does not represent an objective function that can be rated or optimized. It is a <b>design issue</b> and the study will have criteria for them.	N/A

\* Rating 1-10, 10 being most preferred.

4. The quantifiable evaluation criteria suggested by the Committee are shown in the following table. It also presents two additional criteria identified. However, all identified criteria were not applicable to evaluating each individual item. Therefore, appropriate criteria were identified for each evaluation item (e.g., lamp, globe, shielding and pole). The matrix can be further expanded if DDOT/Committee feels more items are to be evaluated.

***Quantifiable evaluation criteria***

Evaluation Criteria	Applicable Criteria for Each Item			
	Lamp Alternatives (HPS, Metal Halide, Inductive, etc.)	Globe Alternatives (Plain, prismatic)	Shielding Alternatives (Cutoff, semi-cutoff, full cutoff)	Pole Alternatives
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.	YES	YES	YES	YES
Aesthetics	--	YES	YES	YES
Color of light (rendition)	YES	--	--	--
Level of Light Pollution (upward & sideways)	--	YES	YES	--
Existing Usage*	YES	YES	YES	YES
Lifecycle Cost Initial Cost Operational & Maintenance Cost	YES	YES	YES	YES

\* Represents preserving existing investment

5. The following table lists the variables that generate various *contexts* for evaluation. The context determines the weight of the evaluation criteria and therefore, the evaluation of the same item under two different scenarios (i.e., contexts) can result in two different sets of weights, and subsequently, outcomes can be different.

The context list was examined for each of the evaluation items to determine whether the desirability (i.e., weight of the criteria) of the item changes with respect to the context. The context type can be grouped together if the item was independent of the context type. For example, all Roadway Functional Classifications for lamp alternatives can be grouped as one, as the lamp alternatives are independent of the Functional Classifications. In some cases, the evaluation alternative was predetermined for a specific context. For example, the shielding and the pole alternatives are predetermined for Interstate/Other Freeway & Expressway and for Alleys. Few of the contexts, such as the Commercial and Intermediate/Residential, change the desirability of the shielding alternatives.

In the Special Type context, the pole alternatives need to be determined for Historic, Gateways and Bridges.

**Context applicability to each item**

Context List	Context Applicability to Each Item			
	Lamp Alternatives (HPS, Metal Halide, Inductive, etc.)	Globe Alternatives (Plain, prismatic)	Shielding Alternatives (Cutoff, semi-cutoff, full cutoff)	Pole Alternatives
Functional type (Interstate, Other Freeway & Expressway, Principal Arterial, Minor Arterial, Collector, Local and Alley)	All - Independent	All - Independent	Interstate/Other Freeway & Expressway and Alley – Predetermined Others - Independent	Interstate/Other Freeway & Expressway and Alley – Predetermined Others - Independent
Area Type (Commercial, Intermediate & Residential)	All - Independent	All - Independent	Commercial and Intermediate/ Residential – Changes	All – Independent (??)
Special Type (Gateways, Monumental Core, BIDS, Tunnel/Underpass, Bridges, Historic)	Monumental Core and Each BIDS – Predetermined Gateway – To be determined Others - Independent	Gateway – To be determined Others – Independent Tunnel/Underpass – N/A	All - Independent	Monumental Core and Each BIDS – Predetermined Historic, Gateway and Bridges – To be determined Tunnel/Underpass – N/A
Scenarios	1. All Inclusive (General) Special Type N/A 2. Special Type - Gateway	1. All Inclusive (General) Special Type N/A 2. Special Type - Gateway	1. Commercial 2. Intermediate/ Residential	1. All Inclusive (General) Special Type N/A 2. Special Type - Gateway 3. Special Type - Bridges 4. Special Type - Historic

6. The **Evaluation Matrices for Lamps** are as follows:

**Scenario Context - Functional Class = All, Area type = All, Special Types = N/A**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		HPS	Metal Halide	Inductive	Fluorescent
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		10	6	6	6
Aesthetics					
Color of light		6	10	9	8
Level of Light Pollution (upward & sideways)					
Existing Usage		10	2	0	0
Lifecycle Cost Initial Cost Operational & Maintenance Cost		6	5	6	10
<b>Composite Index</b>					

\* Rating 1-10, 10 being most preferred.



**Scenario Context - Functional Class = N/A, Area type = N/A, Special Types = Gateway**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		HPS	Metal Halide	Inductive	Fluorescent
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		10	6	6	6
Aesthetics					
Color of light		6	10	9	8
Level of Light Pollution (upward & sideways)					
Existing Usage		10	2	0	0
Lifecycle Cost Initial Cost Operational & Maintenance Cost		6	5	6	10
<b>Composite Index</b>					

\* Rating 1-10, 10 being most preferred.

7. The **Evaluation Matrices for Globes** are as follows:

**Scenario Context - Functional Class = All, Area type = Commercial, Special Types = N/A**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*		
		Plain	Prismatic	Plain with shielding
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		5	8	8
Aesthetics		8	8	8
Color of light				
Level of Light Pollution (upward & sideways)		1	8	8
Existing Usage		8	2	0
Lifecycle Cost Initial Cost Operational & Maintenance Cost		10	9	8
<b>Composite Index</b>				

\* Rating 1-10, 10 being most preferred.

**Scenario Context - Functional Class = All, Area type = Intermediate/Residential, Special Types = N/A**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*		
		Plain	Prismatic	Plain with shielding
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		5	8	8

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*		
		Plain	Prismatic	Plain with shielding
Aesthetics		8	8	8
Color of light				
Level of Light Pollution (upward & sideways)		1	8	8
<i>Existing Usage</i>		8	2	0
<i>Lifecycle Cost</i>				
Initial Cost		10	9	8
Operational & Maintenance Cost				
<b>Composite Index</b>				

\* Rating 1-10, 10 being most preferred.

**Scenario Context - Functional Class = N/A, Area type = N/A, Special Types = Gateway**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*		
		Plain	Prismatic	Plain with shielding
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		5	8	8
Aesthetics		8	8	8
Color of light				
Level of Light Pollution (upward & sideways)		1	8	8
<i>Existing Usage</i>		8	2	0
<i>Lifecycle Cost</i>				
Initial Cost		10	9	8
Operational & Maintenance Cost				
<b>Composite Index</b>				

\* Rating 1-10, 10 being most preferred.

8. The **Evaluation Matrices for Shielding** are as follows:

**Scenario Context - Functional Class = All (except Interstate/Other Freeway & Expressway and Alley), Area type = Commercial, Special Types = All**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*		
		Cutoff	Semi Cutoff	Full Cutoff
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		8	6	10
Aesthetics		8	8	8
Color of light				
Level of Light Pollution (upward & sideways)		8	6	10
<i>Existing Usage</i>		9	1	1
<i>Lifecycle Cost</i>				
Initial Cost				
Operational & Maintenance Cost				
<b>Composite Index</b>				

\* Rating 1-10, 10 being most preferred.

**Scenario Context - Functional Class = All (except Interstate/Other Freeway & Expressway and Alley), Area type = Intermediate/Residential, Special Types = All**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*		
		Cutoff	Semi Cutoff	Full Cutoff
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		8	6	10
Aesthetics		8	8	8
Color of light				
Level of Light Pollution (upward & sideways)		8	6	10
Existing Usage		9	1	1
Lifecycle Cost Initial Cost Operational & Maintenance Cost				
<b>Composite Index</b>				

\* Rating 1-10, 10 being most preferred.

9. The **Evaluation Matrices for Poles** are as follows:

**Scenario Context - Functional Class = All (except Interstate/Other Freeway & Expressway and Alley), Area type = All, Special Types = N/A**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		Upright Poles	Twin-20	Pendant Pole	Teardrop
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		7	6	10	9
Aesthetics		9	10	5	7
Color of light					
Level of Light Pollution (upward & sideways)					
Existing Usage		8	2	8	2
Lifecycle Cost Initial Cost Operational & Maintenance Cost		7	6	10	9
<b>Composite Index</b>					

\* Rating 1-10, 10 being most preferred.

**Scenario Context - Functional Class = N/A, Area type = N/A, Special Types = Gateway**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		Upright Poles	Twin-20	Pendant Pole	Teardrop
Efficiency (based on the following, as applicable) Life duration Power consumption Light output/distribution, etc.		7	6	10	9
Aesthetics		9	10	5	7

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		Upright Poles	Twin-20	Pendant Pole	Teardrop
Color of light					
Level of Light Pollution (upward & sideways)					
<i>Existing Usage</i>		8	2	8	2
<i>Lifecycle Cost</i>					
Initial Cost		7	6	10	9
Operational & Maintenance Cost					
<b>Composite Index</b>					

\* Rating 1-10, 10 being most preferred.

**Scenario Context - Functional Class = N/A Area type = N/A, Special Types = Bridges**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		Upright Poles	Twin-20	Pendant Pole	Teardrop
Efficiency (based on the following, as applicable)					
Life duration		7	6	10	9
Power consumption					
Light output/distribution, etc.					
Aesthetics		9	10	5	7
Color of light					
Level of Light Pollution (upward & sideways)					
<i>Existing Usage</i>		8	2	8	2
<i>Lifecycle Cost</i>					
Initial Cost		7	6	10	9
Operational & Maintenance Cost					
<b>Composite Index</b>					

\* Rating 1-10, 10 being most preferred.

**Scenario Context - Functional Class = N/A, Area type = N/A, Special Types = Historic**

Evaluation Criteria	Weight (w)	Candidate Alternative Rating*			
		Upright Poles	Twin-20	Pendant Pole	Teardrop
Efficiency (based on the following, as applicable)					
Life duration		7	6	10	9
Power consumption					
Light output/distribution, etc.					
Aesthetics		9	10	5	7
Color of light					
Level of Light Pollution (upward & sideways)					
<i>Existing Usage</i>		8	2	8	2
<i>Lifecycle Cost</i>					
Initial Cost		7	6	10	9
Operational & Maintenance Cost					
<b>Composite Index</b>					

\* Rating 1-10, 10 being most preferred.

10. Larry Aurbach suggested including “Brightness” as a criterion.

11. The Streetlight Advisory Committee suggested that the Matrix should be designed in a different way that will be more focused for the designers and citizens.
12. The Committee recommended that the heights of the poles, spacing between the poles, etc, be considered as important criteria that need to be evaluated. It was suggested that the neighbors should be given a choice to choose the wattage but the spacing and the height of the poles should be standard. The poles will be there for the next 50 years but the bulbs can be changed for brighter or dimmer neighborhoods.
13. The matrix should consider a road that changes its functional classification and/or area type from one segment to another. For example, New York Avenue changes from Industrial Collector in the East to Downtown in the West.
14. It was mentioned that “Light Pollution” is not always desirable but sometimes is needed/required. For example in Downtown, uplight may be desired.
15. Based upon the above discussions, Elizabeth Miller suggested using a chart similar to the one below that could be used for evaluation. The committee agreed that this was the best guide to use. A full chart will be prepared for the next meeting.

***Suggested Matrix***

	Commercial (Sidewalk width)	Intermediate (Mixed Use)	Residential	Monumental Core	Historic City and Street
Spacing of poles					
Height of the pole					
Base of the pole					
Aesthetics					

16. It was noted that HPS is preferred at this time in spite of its orange light because of its long life (i.e., 6 years) and energy efficiency when compared to MH, which has a life of 3 years. The MH initial cost is approximately 10% more than HPS. Inductive lamps also produce white light, are long lasting and energy efficient. They are widely used in Europe, however they have not yet been converted into a technology for wide use in the States. The research continues and it is expected to become a viable alternative in the next few years.
17. The Committee noted that the “Color of Light” (e.g., white, yellow, etc.) needed to be considered and not the type of lamp (e.g., HPS, MH, etc.). It was agreed upon that “White light” is preferred for all areas/scenarios as the future strategy of the District; however, the cost consideration must be made. The committee agreed on the following when determining the color that bulbs emit.

- White light is preferred.
  - HPS lamps will continue to be used, until such time when the lifecycle cost of white light (e.g., MH, inductive or other feasible technology) is comparable to HPS.
  - The consistency in the neighborhood must be maintained (i.e., there should not be a mismatch of light color in the same neighborhood).
18. Since, the migration to total white light has to wait for technology to catch up, the committee agreed upon the following strategies for typical maintenance replacement of lights in the interim:
- Change HPS to HPS.
  - Change Incandescent (white) to another white (MH).
  - Change MH to MH.
19. For now, MH is being used only in Monumental Core. It was mentioned that the Historic Districts and Historic Streets are treated the same by DDOT and the Downtown BID will need to follow DDOT.
20. It was suggested that the neighborhoods should be given a range of options to select the wattage of a bulb. Wattage will be discussed further at the next meeting.
21. The placement of poles is based on the existing infrastructure (i.e. utilities, trees, etc. dictate to some degree where a pole cannot be placed). The Committee suggested that a preferred placement be selected, which can be adjusted according to the infrastructure constraints.
22. The Advisory Committee had full consensus on the use of “Prismatic Globes”, because it contributes to more control on light distribution and also saves power consumption. No objection was received when asked for.

Next Meeting Schedule:

The next meeting is scheduled tentatively for Wednesday, May 5, 2004 from 10:00am – 12:00am. A separate meeting reminder will be sent at a later date. The Committee was requested to think about the following items for discussion in the next meeting:

- Height of the pole
- Spacing between the poles
- Base of the pole
- Color of the pole
- Materials of the pole
- Bulb Wattage

## **MINUTES OF THE MEETING HELD ON 5-5-04**

A Streetlight Advisory Committee Meeting was held in the Conference room, 5<sup>th</sup> Floor, District Department of Transportation on 5-5-04. The minutes of the meeting are as follows.

### **Summary**

1. Colleen Hawkinson started off the meeting at 10:15 a.m. She mentioned that the main purpose of the meeting was to discuss the Evaluation Matrix.
2. The committee recommended the same matrix to be used for 3 different scenarios: (1) Historic, (2) Non Historic, and (3) Special Street (may change)
3. It was brought to notice that the Special Street supersedes Historic Street that means, all Historic Streets are not Special but all Special Streets are Historic.
4. Need to consider Alley [in row], and color of pole, material of pole and placement (staggered, one sided, etc)
5. It will be assumed that prismatic globes (vs. standard/plain globes) are used for upright poles. This will help address the glare issues and prismatic globe fixtures guide light onto the sidewalks and street rather than into the sky.
6. The committee was interested to see some pictures of the luminaries, fixtures and poles from the vendors' catalogue to have a visual understanding of different types of poles. These catalogues will be made available at the next meeting. Samples may be found on the Holophane and Spring City websites.
7. Generally Upright poles are used for the mid-block and Pendant poles for the intersections. For the intersection, the committee recommended No. 16, No. 18 and Twin-20 needs to be evaluated first (whether they are in compliance with all the signal standards) before considering the Pendant pole, so that the consistency can be maintained with the midblock. If none of the Upright poles are in compliance then a decorative Pendant pole (for e.g.: Teardrop) that is aesthetically pleasing can be used.
8. The approximate cost of a Cobrahead is \$200 and a Teardrop is \$500-\$600.
9. The Committee was interested to see the results/output for a standard globe vs. prismatic globe vs. Pendant pole for a certain roadway width and sidewalk width.
10. For Special Streets, the type of pole should remain consistent, however communities should have a say on the pole spacing and wattage.
11. It was mentioned that the spacing between the poles will depend on the placement (staggered, one sided, opposite, etc). This placement is dependent on existing underground or overhead infrastructure and other factors such as trees, fire hydrants, utilities, etc.
12. For the Special Street Scenario, the Committee is leaning toward Twin-20 and decorative Pendant poles for the pole type of a Commercial Area. The minimum spacing between the poles for a staggered placement was suggested as 60 feet for a Commercial area and Special Street Scenario. It was recommended that for any utility problem for placing a pole at distance of 60 feet, not to go lower but can go higher than 60 feet. This cannot be done always as this raises an issue for uniform

- distribution of light. Further discussion on establishing minimum spacing requirements will occur during next meeting.
13. For a Commercial area, the amount of light on the street and the sidewalk needs to be considered. For an Intermediate area, the amount of light on the street and the house needs to be considered. For a Residential area, no light is required on the house.
  14. Monumental Core and BIDs are taken off the table as they have been or will be dictated.

Next Meeting Schedule:

The next meeting is scheduled tentatively for Friday, May 14, 2004 from 10:00am –12:00am. A separate meeting reminder will be sent at a later date. The Consultant and the Committee was requested to fill in the updated matrix with their recommendation.



## **MINUTES OF THE MEETING HELD ON 5-13-04**

A Streetlight Advisory Committee Meeting was held in the Conference room, 6<sup>th</sup> Floor, Reeve's Center on 5-13-04. The minutes of the meeting are as follows.

### Summary

1. Colleen Hawkinson started off the meeting at 10:15 a.m.
2. The main purpose of the meeting was to discuss and come to a consensus about the Evaluation Matrices. The consultant presented four Evaluation Matrices for ***Special Streets (NHS & Gateways), Historic Areas/Streets, Non-Historic for Overhead and Underground Power lines***. The Committee's input from earlier meetings and also the consultant's recommendations were incorporated in the presented Matrices.
3. The following Matrix was presented to the Committee for the **Non-Historic Streets with Underground Powerlines**. The bolded options are the Consultants recommendation and depend on Committee to decide which option to choose.

### ***Presented DRAFT Matrix for Non-Historic Streets (with Underground Powerlines)***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Bridges	Alley	Tunnels/ Underpasses	Comments
Pole Type	<b>Cobra Head, Dec. Tear Drop, #14, #16, #18</b>	<b>Cobra Head, Dec. Tear Drop, #14, #16, #18</b>	<b>Cobra Head, Dec. Tear Drop, #14, #16, #18</b>	<b>Cobra Head, Dec. Tear Drop, #14, #16, #18</b>	<b>Cobra Head</b>	Wall packs	- Citizens to choose from (Bold is our preferred) - Pendant Posts are economical - Currently being widely used
Spacing of poles	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	
Height of pole	Depends on Pole Type					N/A	
Base of pole	Depends on Pole Type					N/A	
Color of pole	Grey	Grey	Grey	Grey	Grey	N/A	- Currently used
Material of pole	Depends on the prevailing technology					N/A	
Preferred Orientation	Staggered	Staggered	Staggered	Opposite	Staggered	N/A	-Staggered chosen because of uniformity - Opposite for bridge for aesthetics/symmetry

It was suggested to include a footnote that mentions the height of the building, sidewalk width and roadway width be considered as a contextual item. As the height of the building, sidewalk width and roadway width vary so much from one neighborhood to another, it couldn't be included in the matrix but it should be considered contextually for a case specific study.

It was suggested that the industrial Cobrahead Pendant pole be phased out and instead a decorative Teardrop be used except in Alleys (Cobrahead – 5A). It was noted that for Residential areas the light on the sidewalk is important. There were concerns about Pendant poles being efficient enough to light the sidewalks, as most of the time

the trees cover the arm thus reducing the downward light. Tree trimming was recommended as a solution to this. In Residential areas and on Bridges, it was recommended to replace Upright poles (#14, 16, 18) in kind and Cobrahead by decorative Teardrop. For Tunnels/Underpasses, suggestion was made to use Upright poles for pedestrian Tunnels and Wall packs for vehicular Tunnels.

For the spacing between the poles, a footnote was suggested that states, for special case when the spacing has to be less than the recommended, it must be justified as to why. This will give an option to a neighborhood to have poles closer if they wanted to (if that makes them feel safe). Regarding the color of the poles on the bridges, it was mentioned that the poles are generally matched to the bridge color. A question was raised whether the color of the pole should be a part of this study or the citizens should be given a choice to choose the color they want. It was noted that a single color would help the maintenance program. The updated matrix after incorporating the inputs is as follows:

***Revised Matrix for Non-Historic Streets (with Underground Powerlines)***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Bridges	Alley	Tunnels/ Underpasses	Comments
<b>Pole Type</b>	<b>Dec. Tear Drop, #14, #16, #18</b>	<b>Dec. Tear Drop, #14, #16, #18</b>	<b>Dec. Tear Drop, #14, #16, #18</b> <i>(Note: Replace Upright in kind and Cobrahead changes to Tear Drop)</i>	<b>Dec. Tear Drop, #14, #16, #18</b> <i>(Note: Replace Upright in kind and Cobrahead changes to Tear Drop)</i>	<b>Cobra Head (5A)</b>	Wall packs for vehicular Tunnels, #14, #16, #18 for pedestrian Tunnels	- Citizens to choose from (Bold is our preferred) - Pendant Posts are economical - Currently being widely used
<b>Cutoff Criteria</b>	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	N/A	
<b>Minimum Spacing btw poles*</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	- For special case one can use spacing less than recommended, but needs to be justified.
<b>Height of pole</b>	Depends on Pole Type					N/A	
<b>Base of pole</b>	Depends on Pole Type					N/A	
<b>Color of pole</b>	Grey	Grey	Grey	N/A	Grey	N/A	- Currently used (needs to be checked)
<b>Material of pole</b>	Depends on the prevailing technology					N/A	
<b>Preferred Orientation</b>	Staggered	Staggered	Staggered	Opposite	Staggered	N/A	- Staggered chosen because of uniformity - Opposite for bridge for aesthetics/symmetry

Note: \* For Special Case, the spacing can be less than recommended, but it must be justified

**4. The following Matrix was presented to the Committee for the Non-Historic Streets with Overhead Powerlines.**

***Presented DRAFT Matrix for Non-Historic Streets (with Overhead Powerlines)***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Alley	Bridges	Tunnels/ Underpasses	Comments
<b>Pole Type</b>	Full Cutoff: Cobra Head, Alt: Dec. Tear Drop	Full Cutoff: Cobra Head, Alt: Dec. Tear Drop	Full Cutoff: Cobra Head, Alt: Dec. Tear Drop	Cobra Head	N/A	N/A	- Only lighting arm is to be used
<b>Spacing of poles</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	N/A	
<b>Height of pole</b>	Depends on Pole Type				N/A	N/A	
<b>Base of pole</b>	Depends on Pole Type				N/A	N/A	
<b>Color of pole/arm</b>	Grey	Grey	Grey	Grey	N/A	N/A	- Currently being used
<b>Material of pole</b>	Depends on the prevailing technology				N/A	N/A	
<b>Preferred Orientation</b>	Staggered	Staggered	Staggered	Staggered	N/A	N/A	

\* Note: Existing Upright poles in overhead area will be phased out for consistency.

The lighting arm is the only option as it is attached to the utility wooden poles. Since the industrial Cobrahead is going to be phased out, a decorative Teardrop arm will be used except in Alleys (Cobrahead – 5A). It was mentioned that a full-cutoff is not always preferred, as sometimes upright is needed for lighting a building. The updated Matrix after incorporating the input is as follows:

***Revised Matrix for Non-Historic Streets (with Overhead Powerlines)***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Alley	Bridges	Tunnels/ Underpasses	Comments
<b>Pole Type**</b>	Dec. Tear Drop	Dec. Tear Drop	Dec. Tear Drop	Cobra Head (5A)	N/A	N/A	- Only lighting arm is to be used
<b>Cutoff Criteria</b>	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	N/A	N/A	
<b>Minimum Spacing btw poles*</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	N/A	
<b>Height of pole</b>	Depends on Pole Type				N/A	N/A	
<b>Base of pole</b>	Depends on Pole Type				N/A	N/A	
<b>Color of pole/arm</b>	Grey	Grey	Grey	Grey	N/A	N/A	- Currently being used
<b>Material of pole</b>	Depends on the prevailing technology				N/A	N/A	
<b>Preferred Orientation</b>	Staggered	Staggered	Staggered	Staggered	N/A	N/A	

Note: \* For Special Case, the spacing can be less than recommended, but it must be justified

\*\* Existing Upright poles in overhead area will be phased out for consistency.

***Presented DRAFT Matrix for Historic Areas/Streets***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Bridges	Alley	Tunnels/ Underpasses	Comments
<b>Pole Type</b>	#14, #16, #18, Twin 20	#14, #16, #18, Twin 20	#14, #16, #18, Twin 20	#14, #16, #18, Twin 20	Cobra Head (?)	N/A	- Currently used for historic areas. - Truly historical to DC - Aesthetically more pleasing
<b>Spacing of poles</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	
<b>Height of pole</b>	Depends on Pole Type					N/A	
<b>Base of pole</b>	Depends on Pole Type					N/A	
<b>Color of pole</b>	Grey	Grey	Grey	Grey	Grey	N/A	-Existing color
<b>Material of pole</b>	Depends on the prevailing technology					N/A	
<b>Preferred Orientation</b>	Staggered	Staggered	Staggered	Opposite	Staggered	N/A	

5. The Evaluation Matrix for **Historic Areas/Streets** was presented as follows:

It was suggested that the Twin-20 be used if necessary and the justifications need to be mentioned for using it. Signalized Intersections will use the shortest pole that meets signal requirements. Unsignalized intersections will use the shortest pole that will illuminate the center of the intersection uniformly. The updated matrix is as follows:

***Revised Matrix for Historic Areas/Streets***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Bridges	Alley	Tunnels/ Underpasses	Comments
<b>Pole Type</b>	#14, #16, #18, <i>Twin 20**</i>	#14, #16, #18, <i>Twin 20**</i>	#14, #16, #18	#14, #16, #18, <i>Twin 20**</i>	Cobra Head (5A)	N/A	- Currently used for historic areas. - Truly historical to DC - Aesthetically more pleasing - For Signalized Intersection, the shortest possible pole that will meet the traffic signal criterion - For Unsignalized Intersection, the shortest possible pole that will illuminate the intersection uniformly
<b>Cutoff Criteria</b>	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	N/A	
<b>Minimum Spacing btw poles*</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	
<b>Height of pole</b>	Depends on Pole Type					N/A	
<b>Base of pole</b>	Depends on Pole Type					N/A	
<b>Color of pole</b>	Grey	Grey	Grey	Grey	Grey	N/A	-Existing color
<b>Material of pole</b>	Depends on the prevailing technology					N/A	
<b>Preferred Orientation</b>	Staggered	Staggered	Staggered	Opposite	Staggered	N/A	

Note: \* For Special Case, the spacing can be less than recommended, but it must be justified

\*\* Twin 20 not necessarily desirable unless special

6. The matrix for the **Special Street that includes Gateways and NHS** was presented to the Committee:

***Presented DRAFT Matrix for Special Street (Gateways and NHS)***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Bridges	Tunnels/ Underpasses	Comments
<b>Pole Type</b>	<b>Twin 20**</b> , Alt: Decorative Tear Drop	<b>Twin 20</b> , Alt: Decorative Tear Drop	<b>Twin 20</b> , Alt: Decorative Tear Drop	<b>Twin 20</b> , Alt: Decorative Tear Drop	N/A	- Twin 20s are DC signature poles -Aesthetically more pleasing
<b>Minimum Spacing btw poles</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	
<b>Height of pole</b>	Depends on Pole Type				N/A	
<b>Base of pole</b>	Depends on Pole Type				N/A	
<b>Color of pole</b>	Grey	Grey	Grey	Grey	N/A	- DC Grey is DC Signature
<b>Material of pole</b>	Depends on the prevailing technology				N/A	
<b>Preferred Orientation</b>	Opposite	Opposite	Opposite	Opposite	N/A	- Opposite may be aesthetically more pleasing

\*\* Committee can decide

It was mentioned that the BIDS and NPS areas use Black as their pole color. It was noted that Twin-20; can be used with different wattage and photometric distribution to achieve different lighting levels for different type of areas. It was suggested that the discussion on glare include in the document.

***Revised Matrix for Special Street (Gateways and NHS)***

Criteria	Commercial	Intermediate (Mixed Use)	Residential	Bridges	Tunnels/ Underpasses	Comments
<b>Pole Type</b>	<b>Twin 20**</b> , Alt: Decorative Tear Drop	<b>Twin 20**</b> , Alt: Decorative Tear Drop	<b>Twin 20**</b> , Alt: Decorative Tear Drop	<b>Twin 20**</b> , Alt: Decorative Tear Drop	N/A	- Twin 20s are DC signature poles -Aesthetically more pleasing
<b>Cutoff Criteria</b>	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	Full Cutoff / Cutoff	N/A	
<b>Minimum Spacing btw poles*</b>	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	60 ft, min (on one side) - all orientations	N/A	
<b>Height of pole</b>	Depends on Pole Type				N/A	
<b>Base of pole</b>	Depends on Pole Type				N/A	
<b>Color of pole</b>	Grey/Black***	Grey	Grey	Grey	N/A	- DC Grey is DC Signature
<b>Material of pole</b>	Depends on the prevailing technology				N/A	
<b>Preferred Orientation</b>	Opposite	Opposite	Opposite	Opposite	N/A	- Opposite may be aesthetically more pleasing

Note: \* For Special Case, the spacing can be less than recommended, but it must be justified

\*\* Committee can decide

\*\*\* Black for BIDS and NPS areas

**Next Meeting Schedule:**

The next meeting is scheduled for Wednesday, May 19, 2004 from 10:00am –12:00am. The Committee was requested to

- Think whether color should be a part of this study or not and if so, what color is suggested
- Review the updated matrices,
- Think about the pole type on Special Streets,
- To determine hierarchy of Special Streets vs. Historic Streets.

## **MINUTES OF THE MEETING HELD ON 5-19-04**

A Streetlight Advisory Committee Meeting was held in the Conference room, 6<sup>th</sup> Floor, Reeve's Center on 5-19-04. The minutes of the meeting are as follows.

### **Summary**

1. Colleen Hawkinson started off the meeting at 10:15 a.m. She mentioned that it was the last SAC Meeting and the Committee should give their final opinion about the evaluation matrices and what needs to be included in the Policy. The Draft Streetlight Grand Plan will be completed and distributed to the Committee by June 11. After all the comments from the Committee are incorporated in the document, it will be presented to the Fine Arts Commission, NCPC, ANCs and the other members of DDOT.
2. Mike Dorsey showed several samples of colors that are generally used in DC streetlight poles. They were Bridge Green color (# 140020) currently being used on Key Bridge, Gray (#16099) and Black. DDOT prefers least number of colors for the ease of maintenance. The poles in the District are painted every 7 years. The recommended colors will be used for the new contracts. The Committee came to a consensus about the following color considerations:
  - The poles on the Bridge should be based on existing color and bridge color
  - The color should be the same for the Uprights and the Pendant poles
  - The color should be same for the Traffic Signal and the Streetlight poles
  - Black color should be used for Gateways and historic (for overhead and underground)
  - Non-historic will have gray color
3. Special Streets have been defined as the following. Historic Districts/Streets and National Highway System Streets. Elizabeth Miller proposed streets that fall within the L'Enfant Plan for inclusion. Elizabeth mentioned that she would double check with Office of Planning for different streets that are Special. A list of Special streets is attached.
4. With regards to the minimum spacing between the poles, the Committee asked the consultant to include a footnote stating that 60 feet is not a recommended minimum, but it is an absolute minimum. The Committee also suggested the inclusion of an explanation of how spacing would be determined.
5. When more than one pole is recommended for any scenario, a pole that meets the following criterion and also the AASHTO standards should be chosen.
  - Minimum number of poles
  - Lowest acceptable wattage
  - Maximum Spacing
  - Height of the pole (based on context like height of the building, roadway width, sidewalk width, etc)



6. The Committee suggested the Residential neighborhoods should be allowed to choose between Pendant (Teardrop) and Upright poles (#14, 16, 18). For a Teardrop Pendant pole, a decorative arm with a fixture still needs to be chosen by DDOT.
7. The Committee suggested defining the Historic Areas and Streets in glossary or a footnote in the final document. The Committee recommended to make a note that, any Special District that have adopted their standards through rule making process are exempt from this policy. An example is the Downtown Business Improvement District.
8. The Committee was interested to see the Photometric for Teardrop vs. Cobrahead (whether it is 1:1?) and Twin-20 throughout (mid-block and intersection) vs. Twin-20 at intersection and uprights at mid-blocks (which one is more economical). The Consultant will prepare this information.
9. The Committee was requested to think about an appropriate name that defines all Special Streets in order to give them a sense of importance/grandeur.
10. The Committee suggested few footnotes and comments to be added in the Evaluation Matrices. The updated matrices are as shown in Table 17, Table 18, Table 19, and Table 21.

Next Meeting Schedule:

The next meeting is scheduled tentatively for Wednesday, June 16, 2004 from 10:00am – 12:00am. In this meeting, the consultant will present the document. A separate meeting reminder will be sent at a later date.